

REMARKS

At the outset, the Examiner is thanked for the thorough review and consideration of the pending application. The Non-final Office Action dated February 12, 2007 has been received and its contents carefully reviewed.

By this response, claims 1, 16, 17 and 25 are hereby amended. No new matter is added. Accordingly, claims 1-32 are currently pending. Reexamination and reconsideration in view of the following remarks is respectfully requested.

In the Office Action, claim 16 is objected to because of informalities. Claims 1-8, 11, 12, 17-24, 27 and 28 are rejected under 35 U.S.C. §103(a) as unpatentable over U.S. Patent No. 6,043,511 to Kim (hereinafter "Kim") in view of U.S. Patent No. 6,750,475 to Izumi et al. (hereinafter "Izumi") and U.S. Patent Application Publication No. 2002/0081847 to Jo et al. (hereinafter "Jo"), and further in view of U.S. Patent No. 5,739,877 to Onisawa et al. (hereinafter "Onisawa"). Claims 9, 10, 25 and 26 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Kim, Izumi, Jo and Onisawa, and further in view of U.S. Patent No. 6,091,464 to Song (hereinafter "Song"). Claims 13-16 and 29-32 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Kim, Izumi, Jo and Onisawa, and further in view of U.S. Patent No. 6,674,502 to Terakado et al. ("Terakado").

Applicants respectfully submit that the objection to claim 16 is moot in light of the amendments.

Applicants respectfully traverse the rejection of claims 1-8, 11, and 12, and reconsideration is respectfully requested. Claims 1-8, 11, and 12 are allowable at least in that each of these claims recites a combination of elements, including, for example, "a gate electrode, a gate line and a gate pad electrode on a substrate, wherein all of the gate electrode, the gate line and the gate pad electrode have a double-layered structure including a first barrier metal layer and a first copper layer, wherein the first barrier metal layer is interposed between the substrate and the first copper layer, wherein sides of the first copper layer are inside of sides of the first barrier metal layer, and wherein the first barrier metal layer and the first copper layer have a smooth taper shape without any steps on their sides". None of the cited references including Kim, Izumi, Jo and Onisawa, singly or in combination, teaches or suggests at least this feature of

the claimed invention. In particular, the Examiner recognizes that none of Kim, Jo and Onisawa discloses all the cited features. Also, Izumi discloses laminating a metal film 44 made of Au having a low resistance by electroless plating on a metal film 43 made of Ni exhibiting good adhesion to an oxide film and further laminating by electroplating a metal film 45 made of Cu that has a low resistance and costs less on the Au film 44 (see Fig. 4E and col. 11 lines 57-67). As seen in Fig. 3E, the sides of the copper layer are on the outside. Accordingly, withdrawal of the rejection of claims 1-8, 11, and 12 is respectfully requested.

Applicants respectfully traverse the rejection of claims 17-24, 27 and 28, and reconsideration is respectfully requested. Claims 17-24, 27 and 28 are allowable at least in that each of these claims recites a combination of elements, including, for example, “forming a gate electrode, a gate line and a gate pad electrode on a substrate, wherein all of the gate electrode, the gate line and the gate pad electrode have a double-layered structure including a first barrier metal layer and a first copper layer, wherein the barrier layer is interposed between the substrate and the first copper layer, wherein sides of the first copper layer are inside of sides of the first barrier metal layer, and wherein the first barrier metal layer and the first copper layer have a smooth taper shape without any steps on their sides”. None of the cited references including Kim, Izumi, Jo and Onisawa, singly or in combination, teaches or suggests at least this feature of the claimed invention. In particular, the Examiner recognizes that none of Kim, Jo and Onisawa discloses all the cited features. Also, Izumi discloses laminating a metal film 44 made of Au having a low resistance by electroless plating on a metal film 43 made of Ni exhibiting good adhesion to an oxide film and further laminating by electroplating a metal film 45 made of Cu that has a low resistance and costs less on the Au film 44 (see Fig. 4E and col. 11 lines 57-67). As seen in Fig. 3E, the sides of the copper layer are on the outside. Accordingly, withdrawal of the rejection of claims 17-24, 27 and 28 is respectfully requested.

Additionally, applicants respectfully submit that claims 9, 10, 13-16, 25, d 26 and 29-32 are allowable at least in that they depend from claims 1 and 17, which are allowable.


Thus, the Examiner is respectfully requested to consider the above remarks and to pass this application to issue.

If for any reason the Examiner finds the application other than in condition for allowance, the Examiner is requested to call the undersigned attorney at (202) 496-7500 to discuss the steps necessary for placing the application in condition for allowance. All correspondence should continue to be sent to the below-listed address.

If these papers are not considered timely filed by the Patent and Trademark Office, then a petition is hereby made under 37 C.F.R. §1.136, and any additional fees required under 37 C.F.R. §1.136 for any necessary extension of time, or any other fees required to complete the filing of this response, may be charged to Deposit Account No. 50-0911. Please credit any overpayment to deposit Account No. 50-0911. A duplicate copy of this sheet is enclosed.

Dated: May 14, 2007

Respectfully submitted,

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